Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Unlicensed Use of the 6 GHz Band	)	ET Docket No. 18-295
	)	
Expanding Flexible Use in Mid-Band Spectrum Between 3.7 and 24 GHz	)	GN Docket No. 17-183
	)	

REPLY COMMENTS OF THE ASSOCIATION OF AMERICAN RAILROADS

Kathryn D. Kirmayer
Senior Vice President – Law & General Counsel

Timothy J. Strafford
Associate General Counsel

THE ASSOCIATION OF AMERICAN RAILROADS
425 Third Street, S.W., Suite 1000
Washington, DC 20024

Michele C. Farquhar
Tom Peters
John Castle
HOGAN LOVELLS US LLP
555 Thirteenth Street, N.W.
Washington, DC 20004

March 18, 2019

TABLE OF CONTENTS

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Unlicensed Use of the 6 GHz Band	)	ET Docket No. 18-295
	)	
Expanding Flexible Use in Mid-Band Spectrum Between 3.7 and 24 GHz	)	GN Docket No. 17-183
	)	

REPLY COMMENTS OF THE ASSOCIATION OF AMERICAN RAILROADS

The Association of American Railroads ("AAR") submits these reply comments in response to the Notice of Proposed Rulemaking ("NPRM") released by the Federal Communications Commission ("Commission" or "FCC") in the above-captioned proceedings.[1]

I. INTRODUCTION AND SUMMARY

Broad participation in the comment round indicates that a diverse range of stakeholders have an interest in the outcome of this proceeding, particularly public safety and critical infrastructure incumbents with mission-critical operations in the 5.925-7.125 GHz band ("6 GHz band").[2] Given the intolerable risk of harmful interference posed by unlicensed operations, incumbent licensees argued that the Commission must protect their licensed operations.[3] The AAR agrees with the strong concerns raised by these other incumbents and believes that the

---

[1] *Unlicensed Use of the 6 GHz Band; Expanding Flexible Use in Mid-Band Spectrum Between 3.7 and 24 GHz*, Notice of Proposed Rulemaking, 33 FCC Rcd 10496 (2018) ("*NPRM*").

[2] *See, e.g.*, Comments of APCO International ("APCO Comments"); Comments of the National Public Safety Telecommunications Council ("NPSTC Comments"); Comments of Xcel Energy Services Inc. ("Xcel Energy Comments"); Comments of Utilities Technology Council, *et al.* ("UTC *et al.* Comments"); Comments of the City of Austin (TX) (filed Feb. 14, 2019) ("City of Austin Comments"); and Comments of Idaho Power Company (filed Feb. 14, 2019) ("Idaho Power Comments"). Unless indicated otherwise, all comments cited in these footnotes were filed on February 15, 2019 in ET Docket No. 18-295.

[3] *See, e.g.*, APCO Comments at 2 ("Public safety use of the 6 GHz band must remain reliable and free from interference."); Xcel Energy Comments at 3 ("The FCC must protect licensed utility 6 GHz operations.").

Commission should not permit unlicensed operations in the 6 GHz band. If the Commission does permit unlicensed use, however, it should adopt the conditions described below and elsewhere in the record that commenters agree will better protect incumbent licensees' operations from harmful interference.

II. GIVEN THEIR NEED FOR RELIABLE COMMUNICATIONS, INCUMBENTS OPPOSE UNLICENSED USE OF THE 6 GHZ BAND

A significant number of commenters described their mission-critical communications systems in the 6 GHz band and expressed strong opposition to allowing unlicensed operations in the band.

The AAR, for example, described how its freight railroad members' microwave systems in the 5.925-6.425 GHz ("U-NII-5") and 6.525-6.875 GHz ("U-NII-7") bands "serve as critical backbones for the transport of railroad communications, including dispatch radio traffic, centralized train control systems, positive train control ('PTC'), phone systems, and crew train orders."[4] The importance of these applications necessitate that the freight railroads' microwave systems "be extremely reliable," with "availability greater than 99.999%."[5] The AAR therefore reiterated its opposition to "allowing unlicensed operations in the 6 GHz band."[6]

Utilities also opposed unlicensed operations in the 6 GHz band. The Utilities Technology Council ("UTC") and others highlighted that the 6 GHz band is "uniquely suited [for] supporting highly reliable communications and . . . is already heavily used by electric, oil, natural gas, and water companies for mission critical operations."[7] These mission-critical operations include "remotely monitor[ing] and control[ling] devices throughout the power grid in order to ensure

[4] Comments of the Association of American Railroads at 3 ("AAR Comments").

[5] *Id.* at 4.

[6] *Id.* at 5; *see also* Reply Comments of the Association of American Railroads, GN Docket No. 17-183, at 1 ("Like many other commenters, AAR does not believe that the 6 GHz Band should be made available for unlicensed use.") (filed Nov. 15, 2017).

[7] UTC *et al.* Comments at i.

that it is able to safely and efficiently deliver electric and gas service, minimize outages, and protect the safety of the public and its workers."[8] Since unlicensed devices would threaten utilities' operations, many utilities made clear that "[t]he record does not support allowing unlicensed operations in the 6 GHz band."[9]

Other stakeholders expressed their opposition, as well. Public safety users highlighted their reliance on the 6 GHz band to provide "backhaul for first responder dispatch."[10] To guarantee that first responders promptly address emergency calls, public safety organizations' fixed microwave systems are "designed for availability times of 99.9999%, which means a downtime of no longer than 30 seconds per year."[11] A brief interference event requires resynchronizing a fixed service receiver, which can last 15 minutes or more, "unacceptably reducing the network availability time below that which public safety users require and have

[8] Xcel Energy Comments at 2-3; *see also* UTC *et al.* Comments at 4 ("[E]lectric companies use the 6 GHz [band] for supervisory control and data acquisition ('SCADA') and teleprotection systems that monitor and control the balance of power on the grid, which must operate constantly in near real-time to avoid system instability and power disruptions.").

[9] UTC *et al.* Comments at 7; *see also* Xcel Energy Comments at 3 ("[I]t is imperative that the Commission now allow unlicensed use in the band because it could threaten the reliability of existing utility point-to-point operations and preclude the ability of utilities to expand their systems to meet the increasing demands placed on the power grid."); Comments of Southern Company Services, Inc. at 1 ("The proponents of unlicensed access to the 6 GHz band fail to offer much certainty that this spectrum can be shared without harmful interference to incumbent microwave systems.") ("Southern Company Services Comments"); Comments of Tucson Electric Power Company and UNS Electric, Inc. at 3 ("[T]he Company does not support the unlicensed use of the 6 GHz band") ("Tucson Electric Power Comments"); Comments of Portland General Electric at 1 ("PGE opposes the proposal to expand the 6 GHz band to include unlicensed operations, which threatens to cause harmful interference to microwave systems that PGE uses to ensure the safe, reliable and secure delivery of essential energy to our customers."); Comments of the El Paso Electric Company at 8 ("El Paso Electric opposes the Commission's proposal to expand unlicensed usage of the 6 GHz band with unlicensed users. Critical infrastructure organizations, such as electric utilities, provide services that are vital to the health and safety of the public, as well as the nation's economy.").

[10] APCO Comments at 4.

[11] *Id.*

made substantial investments to achieve."[12] Public safety incumbents therefore expressed opposition to permitting unlicensed use in the 6 GHz band.[13]

Given incumbent licensees' legitimate concerns about the potential for harmful interference to safety and mission-critical operations, the Commission should not permit unlicensed devices to operate in the 6 GHz band.

III. IF THE COMMISSION PERMITS UNLICENSED OPERATIONS IN THE 6 GHZ BAND, COMMENTERS AGREE THAT CERTAIN RESTRICTIONS SHOULD BE PUT IN PLACE TO PROTECT INCUMBENT LICENSEES

If the Commission moves forward with its proposal to permit unlicensed operations in the 6 GHz band, it should adopt a number of widely supported restrictions that will minimize the potential for harmful interference to incumbent operations. These restrictions include: (1) thoroughly testing the Automated Frequency Coordination ("AFC") system and restricting the initial deployment of unlicensed devices via a phased rollout; (2) requiring a centralized AFC system that relies on data in ULS, registers unlicensed devices, and is queried by unlicensed devices for available frequencies every twenty-four hours; (3) establishing interference protection criteria, more specifically an interference to noise ("I/N") power ratio that equals -6 dB; (4) prohibiting co-channel, adjacent channel, and second-adjacent channel use by unlicensed devices within properly defined exclusion zones of any fixed link; (5) prohibiting mobile or portable use of unlicensed devices (*e.g.*, in any moving vehicle); and (6) creating an interference resolution process that imposes no costs on incumbent licensees.

---

[12] *Id.*

[13] *See id.* at 1 ("APCO is concerned that the proposed unlicensed use in the 6 GHz band will cause harmful interference to public safety operations."); Comments of Nassau County Police Department (NY) at 1 (filed Jan. 30, 2019) ("The FCC's proposal to allow unlicensed users within the 6 GHz frequency bands does not contribute to the stability, reliability or dependability of NCPD communications, and, in fact, *it puts our vital communications more at risk*.") (emphasis added).

A. The AFC system should be thoroughly tested, and the initial deployment of unlicensed devices should be restricted.

The Commission should test the AFC system prior to its implementation and restrict the initial deployment of unlicensed devices in the 6 GHz band. These two simple precautionary measures will ensure that the Commission's overall design for protecting incumbent licensees in the 6 GHz band functions successfully before full-scale deployment inadvertently magnifies a potential problem that easily could have been demonstrated and resolved through adequate, pre-deployment testing.

Testing the AFC System. While commenters widely supported the Commission's proposal to create an AFC system,[14] many noted that "all discussions to date of such system are theoretical and have not been tested."[15] Therefore, a number of parties wisely cautioned that the AFC system should be tested extensively before it is implemented.

Comsearch pointed out that "[t]he Commission's record shows (and our experience concurs) that new methods to effect dynamic spectrum sharing are feasible but must be crafted and continually managed to provide utmost protection for licensed incumbents."[16] A number of issues quickly complicate the successful functioning of any dynamic spectrum sharing regime – for example, an AFC system would need to: (1) "[u]se accurate and frequently-updated data on incumbent systems and their respective configurations;" (2) "[i]ncorporate mutually-agreeable technical parameters and methods for protecting licensed incumbents;" (3) "accommodate uncertainties in unlicensed device location reporting, including device height;" (4) "[i]mplement interference detection and mitigation that places absolutely no burden on licensed incumbents;" (5) disable devices "immediate[ly] . . . upon determination of harmful interference;" and (6) "[i]ncorporate reliable system security."[17]

---

[14] *See NPRM* at ¶¶ 25-36 (seeking comment on various issues associated with an AFC system).

[15] Tucson Electric Power Comments at 9; *see also* UTC *et al.* Comments at i ("AFC is a purely conceptual approach that has not been proven to perform as promised.").

[16] Comments of Comsearch at 15 ("Comsearch Comments").

[17] *Id.* at 15-16.

Therefore, commenters appropriately recommended that the Commission "should implement trial testing requirements to demonstrate that the AFC . . . operate[s] correctly according to the protocols and algorithms adopted . . . [and] in a variety of environments" (*e.g.*, urban, suburban, and rural areas).[18]

Restricting Initial Deployment of Unlicensed Devices. A controlled rollout of unlicensed devices will further minimize the risk that unlicensed devices will cause harmful interference to licensed incumbent operations, and should be adopted. The deployment of unlicensed devices "should initially be constrained to small areas and numbers[,] . . . with deployment increasing thereafter on a controlled schedule."[19] This trial run would allow stakeholders to assess the impact that the "novel and elaborate" AFC system would have on licensed operations "while the numbers are still small[] and corrective action is still feasible."[20] The Commission has adopted limited rollouts previously, including in analogous dynamic spectrum sharing contexts,[21] and should do so here.

As an alternative method of limiting unlicensed devices' rollout and thus protecting incumbent licensees' operations, the Commission could restrict the number of unlicensed devices that can register with the AFC system in a given area and use the 6 GHz band. As unlicensed devices successfully demonstrate under real-world conditions that they do not cause harmful

---

[18] City of Austin Comments at 3; *see also* Comments of the Fixed Wireless Communications Coalition at 31-32 (The AFC system "will need testing at least comparable to the Commission's program for white space devices.") ("FWCC Comments"); Tucson Electric Power Comments at 10 (An "AFC system must be tested, over an extensive period of time, prior to allowing unlicensed use of this spectrum.").

[19] FWCC Comments at 32.

[20] *Id.*

[21] *See id.* ("The TV White Space system began operation in just a few isolated locations, and then expanded first to seven geographically small northeastern states and the District of Columbia."); *see also* AAR Comments at 13 (citing example where the Commission allowed an applicant to "deploy a limited number of terminals per quarter and . . . notify the Commission when certain deployment targets were reached") (citing *Higher Ground LLC Application for Blanket Earth Station License*, Order and Authorization, 32 FCC Rcd 728, ¶ 36 (2017)).

interference to incumbent operations, the Commission can increase the number of unlicensed devices permitted to register with an AFC system.

B. A centralized AFC system that relies on data from ULS should govern all unlicensed devices.

Commenters representing a diverse range of views agree that the AFC system should govern all devices requesting use of unlicensed spectrum in the U-NII-5 and U-NII-7 bands, if not the entire 6 GHz band, in order to protect licensed operations.[22] The AFC system would register unlicensed devices, which would provide the AFC system with information that could prevent harmful interference or help resolve interference issues (*e.g.*, device location, identification information, technical parameters).[23] Moreover, while certain parties advocating a

[22] *See, e.g.*, APCO Comments at 9-11; FWCC Comments at 13; Comments of Midcontinent Communications at 3 ("[A]ny minimal risk of harmful interference can be managed . . . through the [AFC] system.") ("Midcontinent Comments"); Comments of Microsoft Corporation at 15-16 ("Our experience with TV White Space databases gives us great confidence that use of an AFC will be successful.") ("Microsoft Comments"); Comments of Verizon at 4 ("An AFC system should protect incumbent service licenses.") ("Verizon Comments"); Comments of Ericsson at 20 ("Ericsson appreciates the ongoing cooperation between FWCC and some RLAN proponents as they work toward a system of automatic frequency control that would protect FS receivers.") ("Ericsson Comments"); and Comments of the Wireless Internet Service Providers Association at 2 ("[E]nabling higher-power operations in this 850 megahertz of spectrum, accessible via automated frequency coordination ('AFC') to ensure incumbents are protected from harmful interference, will alleviate congestion in the 6 GHz band.") ("WISPA Comments").

[23] *See, e.g.*, APCO Comments at 6 ("APCO urges the Commission to make device registration in the database mandatory for receiving permissible frequencies. . . . Registration should include information such as device location, device identification information, contact information for the device operator, and the device's technical parameters."); WISPA Comments at 19 ("Registration provides a means to resolve complaints from licensees with information about potential interferers."); Comments of AT&T Services, Inc. at 18-19 ("Registration should also be required at least for all radio local area networks—indoor as well as outdoor—as even indoor RLAN devices may potentially cause harmful interference with licensed operations with the proposed power limits.") ("AT&T Comments"); Comments of Teradek, LLC and Amimon, Inc. at 5 ("We propose that any device should be registered in the AFC and that it should happen automatically."); Comments of Federated Wireless, Inc. at 6 ("6 GHz unlicensed access points should provide location and technical information to the AFC system with sufficient accuracy that it can conduct the computations needed to identify the channels on which the unlicensed device could operate in accordance with the incumbent protection criteria.") ("Federated Wireless Comments").

decentralized AFC system architecture argued that the Commission should provide flexibility for an AFC system to be *either* centralized or decentralized,[24] more commenters agreed that the AFC system's architecture should be centralized, which will prompt quicker, more accurate updates.[25] Even the Wireless Internet Service Providers Association ("WISPA"), which argued for sufficient flexibility to permit a centralized or decentralized approach,[26] acknowledged that a "centralized model is more likely to initially attract investment and innovation given that this model has been used for TV white space and CBRS databases."[27] If the Commission permits unlicensed use in the 6 GHz band, any AFC operator should draw from past experience in these analogous situations and utilize a centralized system architecture to reduce the probability that

[24] *See* Microsoft Comments at 18 (urging the Commission to "allow both centralized and decentralized AFC models"); Comments of Apple Inc. at 13 ("The FCC's rules should provide flexibility for industry to implement either approach.") ("Apple Comments"); and Comments of Netgear, Inc. at 2 (filed Feb. 13, 2019).

[25] *See, e.g.*, APCO Comments at 9 (recommending a "single AFC system operator," which will make "identifying and resolving interference easier"); FWCC Comments at 13-14 ("The database should be centralized (not distributed into every standard-power access point) in order to facilitate prompt and accurate updates."); Midcontinent Comments at 14 ("A centralized database stored in the cloud would be easiest for operators to use."); and Verizon Comments at 5 ("[T]he AFC system should be a positive, centralized controller able to select the appropriate channel allocation and/or power level for a requesting access point so as to protect incumbent service licensees from harmful interference."); Comments of Motorola Solutions Inc. at 2 ("A cloud-based AFC mechanism would allow *timely* and *universal* updates.") ("Motorola Comments"); Comments of the City of New York at 3 ("The City supports the establishment of a centralized [AFC] system to include a database containing operating frequency, horizontal and vertical location and relevant technical data for all licensed transmitting devices.") ("City of New York Comments"); and Federated Wireless Comments at 8 ("[A] cloud-based AFC system would foster innovation and enhancements of AFC system functions themselves. By centralizing the computational and data management capabilities, AFC system operators could develop enhancements to their systems to continue maximizing spectrum access for unlicensed users and support emerging use cases.").

[26] *See* WISPA Comments at 17 ("[E]quipment manufacturers should not be prohibited from developing access points that will perform the same function at the local level as an alternative to (not a replacement for) the centralized model.").

[27] *Id.* at 17.

incumbents in the 6 GHz band experience harmful interference to their public safety and mission-critical operations.

Since the Commission's Universal Licensing System ("ULS") "contains data sufficient for the AFC system's purposes,"[28] commenters universally agree that the AFC system should rely on data in ULS. As previously pointed out, however, "the lag time between frequency coordination and license grant can render ULS data outdated and inaccurate."[29] Obsolete data would increase the risk of harmful interference to incumbent licensees' operations. In order to protect licensed operations, the Commission therefore should follow the Wi-Fi Alliance's recommendation that licensees receive an opportunity to "affirm current operations or modify ULS entries to reflect existing uses" without paying a filing fee.[30]

Finally, the AAR agrees with most commenters that unlicensed devices should query an AFC database for available frequencies at least every twenty-four hours to appropriately minimize the probability that such devices harmfully interfere with incumbent operations.[31] The Commission therefore should reject the Wi-Fi Alliance's proposal that unlicensed devices "verify available channel assignments with the AFC every 30 days," which represents an extreme outlier.[32]

---

[28] APCO Comments at 10.

[29] AAR Comments at 7.

[30] Comments of the Wi-Fi Alliance at 22 ("Wi-Fi Alliance Comments"); *see also* AAR Comments at 7-8 (discussing the need to "incentivize the inclusion of fully accurate data in the database, minimize incumbents' costs, and ultimately ensure the AFC system functions successfully" by waiving filing fees for licensees "operating in the U-NII-5 and U-NII-7 bands").

[31] *See, e.g.*, AT&T Comments at 19 ("AT&T agrees with CommScope that 'any sharing approach should require at least *daily* RLAN interactions with the coordination database.'") (emphasis added) ("AT&T Comments"); Motorola Comments at 2-3 ("[H]igher powered unlicensed equipment would be required [to] query the cloud AFC function periodically, likely on a daily basis."); Comments of the National Spectrum Management Association at 14 ("NSMA Comments") ("Frequency availability should be verified daily as the FCC database is updated daily.").

[32] Wi-Fi Alliance Comments at 23.

C. The Commission should establish I/N as an interference protection criteria and a limit of -6 dB.

The AAR agrees with most parties' recommendation that the Commission establish an interference to noise ("I/N") power ratio that is equal to -6 dB.[33] As the Commission and others have highlighted, the I/N power ratio is simple to apply.[34] Furthermore, "a -6 dB I/N threshold for the purpose of protecting FS receivers . . . has historically proven to be effective."[35] Since the Fixed Wireless Communications Coalition and proponents of unlicensed use in the 6 GHz band have "agreed to this value,"[36] the Commission should adopt an I/N of -6 dB and reject the Wi-Fi Alliance's recommendation of 0 dB, which (contrary to its claims) is not sufficient to protect licensed receivers from harmful interference.[37]

D. OOBE limits are insufficient on their own to protect adjacent channel operations, so co-channel, adjacent channel, and second-adjacent channel operations should be prohibited within properly defined exclusion zones.

WISPA argues that a prohibition on adjacent-channel operations is unnecessary because out-of-band-emissions ("OOBE") limits will be sufficient to protect adjacent channels.[38] As the AAR made clear, however, OOBE limits alone will be insufficient to protect adjacent channel

---

[33] *See, e.g.*, APCO Comments at 11-12; FWCC Comments at 22; Comments of the Critical Infrastructure Coalition at i; Xcel Energy Comments at 7; UTC *et al.* Comments at 14-15.

[34] *See NPRM* at ¶ 42 ("The I/N ratio is a simpler metric than the C/I."); *see also* APCO Comments at 11-12 ("APCO prefers to use the ratio of interference to noise (I/N) power because it is simpler to apply than the ratio of the carrier to interference (C/I) power."); FWCC Comments at 22 ("An I/N criterion is simpler to apply.").

[35] Comments of Facebook, Inc. at 7 ("Facebook Comments").

[36] FWCC Comments at 22 (citing *Frequency Sharing for Radio Local Area Networks in the 6 GHz Band January 2018*, attached to Letter from Paul Margie, Counsel to Apple Inc., et al. to Marlene Dortch, Secretary, FCC, in GN Docket No. 17-183 (filed Jan. 26, 2018)).

[37] *See* Wi-Fi Alliance Comments at 24 ("[T]he I/N of 0 dB offers sufficient harmful interference protection to a licensed receiver.").

[38] *See* WISPA Comments at 21 ("WISPA concurs that there is no need for the AFC to protect adjacent channels, at least in general. The out-of-band emissions limits applicable to U-NII devices generally require a stringent emission standard such that the impact of an adjacent-channel standard-power transmitter is unlikely to exceed that of a co-channel low-power transmitter, much less a higher-power, adjacent-channel licensed link.").

fixed service links because "[i]nterference is often a function of the victim receiver, not just emissions from the interfering transmitter. Receivers can experience interference even when transmitters in adjacent channels have no out-of-band emissions."[39]

Multiple parties agreed with the AAR, arguing that the Commission should restrict co-channel, adjacent channel, and second-adjacent channel use.[40] Failure to do so would "raise[] an unacceptable risk of interference and create[] a double standard compared to other parts of the Commission's rules, which currently protect against co-channel and adjacent channel interference between licensed operations."[41] It also "would increase costs on licensees by requiring them to improve receiver performance in a way that accounts for unlicensed transmissions in first and second adjacent channels."[42] As AT&T has pointed out, incumbent licensees that rely on the 6 GHz band for public safety and mission-critical communications should not bear the costs associated with new uses that threaten harmful interference.[43] The Commission therefore should properly impose these costs on unlicensed users, protect incumbent licensees, and prohibit co-channel, adjacent channel, and second-adjacent channel use within properly defined exclusion zones.

---

[39] AAR Comments at 10.

[40] *See, e.g.*, FWCC Comments at App. B ("Need for Adjacent Channel Interference Protection"); Xcel Energy Comments at 7 ("Xcel Energy also disagrees with the Commission's suggestion that adjacent channel protection is unnecessary."); UTC *et al.* Comments at 14 (supporting "the proposal by FWCC to require adjacent channel protection"); and City of New York Comments at 4 (urging the Commission to "incorporate adjacent channel and second adjacent channel interference protection analysis into any AFC system it proposes").

[41] UTC *et al.* Comments at ii.

[42] AAR Comments at 10.

[43] AT&T Comments at 18 ("New users should bear all costs of accommodating their new uses into the 6 GHz band, especially costs associated with interference resolution.").

E. Use of unlicensed devices in moving vehicles should be prohibited.

Several commenters argued that the Commission should permit unlicensed devices to operate as mobile devices or in moving vehicles.[44] These parties, however, rely on faith-based arguments to justify their desired outcome. For example, according to Apple, any adopted rules regarding use in automobiles "should permit the industry to create solutions that rely on AFC systems, which *can and will* protect incumbent services."[45]

As discussed above, however, the AFC system remains "purely conceptual" and "has not been proven to perform as promised."[46] The Commission recognized the unique difficulties posed by use of unlicensed devices in moving vehicles, noting that "it would be impractical for an AFC system to provide and update the list of available frequencies to a standard-power access point while it is in motion."[47] The Commission thus proposed that both standard-power and low-power unlicensed devices "be prohibited from operating in moving vehicles such as cars, trains, or aircraft,"[48] which was supported by a number of commenters.[49] Accordingly, the Commission should adopt its proposal.

---

[44] *See, e.g.*, Wi-Fi Alliance Comments at 35 (The Commission should "establish appropriate transmission power levels for mobile and transportable operations factoring in vehicle and body losses."); Comments of the Boeing Company at 2 (recommending that commercial aircraft be treated "as indoor locations for all 6 GHz U-NII devices"); Comments of Apple Inc., Broadcom Inc., Cisco Systems, Inc., *et al.* at 50-53 ("The rules should permit portable AFC-controlled devices, including devices in vehicles.").

[45] *See* Apple Comments at 2 (emphasis added).

[46] UTC *et al.* Comments at i; *see supra* at 5-6.

[47] *NPRM* at ¶ 84.

[48] *Id.*

[49] *See, e.g.*, FWCC Comments at 34 ("We agree with the Commission that RLAN operation cannot be allowed in moving vehicles, due to the difficulty of updating frequency information rapidly enough to accommodate changing locations."); APCO Comments at 18 ("The Commission proposes to prohibit operation of unlicensed access points in moving vehicles. . . . APCO agrees with these proposals."); Southern Company Services Comments at 18-19 ("Southern sees no viable way to permit mobile hotspots or transportable operations without significant risk of interference to fixed microwave systems. . . . Operation with moving vehicles or unmanned aircraft systems raises the same concerns as stated above for mobile hotspots or transportable devices."); Comments of Sirius XM Radio Inc. at 13-14 ("Sirius XM strongly

F. Any interference resolution process should not impose costs on incumbent licensees.

Commenters proposed a number of interference resolution measures that would expedite elimination of interference and cost recovery. For example, multiple commenters proposed that the AFC system handle interference resolution.[50] Other commenters suggested that the AFC system should be responsible for harmful interference if "an interfering device that should have been under its control is found at an unauthorized location or with operating parameters that vary from the parameters dictated by the AFC operator."[51] Tucson Electric Power recommended that the Commission "establish an expedited reporting and identification process that will give critical infrastructure providers fast-track access to Enforcement Bureau resources."[52] The AAR agrees that "there must be a plan to address interference when the AFC system fails,"[53] and the plan must not impose costs on incumbent licensees.[54]

---

supports the Commission's proposal to prohibit deployment of unlicensed access points in moving vehicles, such as trains, cars, and aircraft, and to ban all unlicensed devices in unmanned aircraft."); Comments of Intelsat License LLC and SES Americom, Inc. at 3 ("[N]o devices should be permitted to be deployed in vehicles of any type, including unmanned aircraft.").

[50] *See, e.g.*, FWCC Comments at 35 ("An AFC system operator that receives an interference report from an FS operator, and can narrow down the source to one or a few RLANs, should be required to immediately disable the offending RLAN(s), without prior notice, pending repair or replacement."); Comments of Sony Electronics Inc. at 3 ("The AFC system should "[r]eceive reports of interference and requests for additional protection from incumbent users and promptly address interference issues."); Idaho Power Comments at 7 (The Commission should "[r]equire proactive identification and resolution of potential interfering operations a priori.").

[51] Southern Company Services Comments at 13; *see also* UTC *et al.* Comments at 16-17 ("Enforcement mechanisms are needed if interference occurs to licensed microwave systems in the 6 GHz band, including . . . Commission clarification that unlicensed operators or AFC system operators are legally liable for the consequences of interference to microwave systems in the band.").

[52] Tucson Electric Power Comments at 29.

[53] UTC *et al.* Comments at i.

[54] *See* APCO Comments at 4 ("APCO is generally supportive of additional interference mitigation measures suggested by the Commission, so long as new costs are not imposed on public safety users."); AT&T Comments at 18 ("New users should bear all costs of accommodating their new uses into the 6 GHz band, especially costs associated with interference resolution.").

IV. THE COMMISSION SHOULD REJECT CERTAIN COMMENTERS' CALLS TO RELOCATE INCUMBENTS IN THE U-NII-7 BAND

Ericsson and CTIA propose "repurposing the 6.425-7.125 GHz band for licensed flexible-use service and auctioning the band."[55] While both parties acknowledge that their request would require issuing a Notice of Proposed Rulemaking or Further Notice of Proposed Rulemaking,[56] CTIA suggests that the release of such an item "need not delay any action in the current rulemaking – the Commission can move ahead and adopt a new spectrum sharing regime in the lower portion of the 6 GHz band that allows unlicensed operations while protecting incumbent licensed uses."[57]

The Commission should reject Ericsson's and CTIA's proposal. The proposal is outside the scope of this proceeding, which seeks comment on "tailored rules that will support compatibility of unlicensed operations in each portion of the [6 GHz] band" while "preserv[ing] and protect[ing] the important base of incumbent users in these frequency bands."[58] Comments are an improper vehicle for such a dramatic proposal. Given the scope of Ericsson's and CTIA's request, the parties should file a Petition for Rulemaking that "set[s] forth the text or substance of the proposed rule [or] amendment . . . together with all the facts, views, arguments and data deemed to support the action requested."[59] Neither party has undertaken this work in their comments, and it is not the Commission's job to do that work for them.

---

[55] Ericsson Comments at 4; *see also* Comments of CTIA at 2, 9-10 ("The Commission should adopt a Further Notice to propose exclusive use, flexible rights licensing in the upper portion of the 6 GHz band.") ("CTIA Comments").

[56] *See* Ericsson Comments at 4 (The Commission "should issue a notice of proposed rulemaking to consider repurposing the 6.425-7.125 GHz band for licensed flexible-use service and auctioning the band."); CTIA Comments at 9-10 ("The Commission should promptly issue a further notice of proposed rulemaking to consider licensing the upper portion of the 6 GHz band for exclusive use, flexible rights services.").

[57] CTIA Comments at 10.

[58] *NPRM* at ¶ 2.

[59] 47 C.F.R. § 1.401(c).

Even if the proper filings were made, technical and logistical reasons would counsel in favor of denying Ericsson's and CTIA's request. First, no other fixed service ("FS") bands are suitable relocation bands for incumbent licensees in the U-NII-7 band, so it is unclear where these licensees should be moved. The U-NII-5 band is congested, and higher-frequency FS bands are subject to rain fade. This characteristic renders those higher-frequency bands too unreliable – and therefore unacceptable – for mission-critical communications.

Second, the logistics associated with relocation would be extremely complicated. The AAR's member railroads have at least 1,155 fixed-link microwave licenses in the U-NII-7 band. Public safety organizations and utilities also hold a large number of licenses in the U-NII-7 band. These licensees' public safety or mission-critical operations require reliable communications, so the necessary precautions required to eliminate the risk of temporary downtimes further complicate the relocation proposal.

Third, past experience in the 800 MHz band demonstrates that relocating incumbents transmitting public safety or mission-critical communications would take many, many years. In 2002, the Commission released an NPRM soliciting "proposals on how best to remedy interference to 800 MHz public safety systems."[60] Two years later, the Commission adopted a plan to relocate and reimburse certain public safety licensees.[61] As of 2019, the relocation process is still ongoing.[62] If the Commission decides to allow unlicensed devices to operate in the 6 GHz band, it should focus its efforts on protecting incumbents that have occupied the band for decades. Rebanding represents a diversion.

---

[60] *Improving Public Safety Communications in the 800 MHz Band; Consolidating the 900 MHz Industrial/Land Transportation and Business Pool Channels*, Notice of Proposed Rulemaking, 17 FCC Rcd 4873, ¶ 2 (2002).

[61] *See Improving Public Safety Communications in the 800 MHz Band, et al.*, Report and Order, Fifth Report and Order, Fourth Memorandum Opinion and Order, and Order, 19 FCC Rcd 14969 (2004).

[62] *See Improving Public Safety Communications in the 800 MHz Band*, Order, 33 FCC Rcd 6324 (PSHSB 2018) (acknowledging that "rebanding has taken considerably longer than anticipated").

V. CONCLUSION

The AAR, utilities, public safety organizations, and other entities rely on the 6 GHz band for mission-critical communications. These entities have highlighted the threat that unlicensed use of the 6 GHz band poses to their operations and therefore continue to oppose its introduction, especially in the U-NII-5 and U-NII-7 bands. If the Commission proceeds with its proposal, however, it should impose appropriate safeguards – discussed above and elsewhere in the record – to protect incumbent licensees' operations.

Respectfully Submitted,

/s/ Michele C. Farquhar
Michele C. Farquhar
Tom Peters
John Castle
HOGAN LOVELLS US LLP
555 Thirteenth Street, N.W.
Washington, DC 20004

Kathryn D. Kirmayer
Senior Vice President – Law & General Counsel

Timothy J. Strafford
Associate General Counsel

THE ASSOCIATION OF AMERICAN RAILROADS
425 Third Street, S.W., Suite 1000
Washington, DC 20024

March 18, 2019